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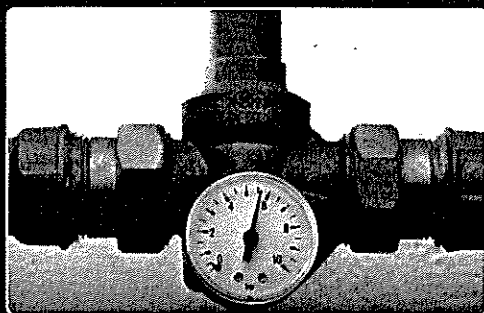
WATER: GUIDELINES FOR AREAS OF MAJOR USE

## WATER-SAVING TECHNOLOGIES



## Infrastructure

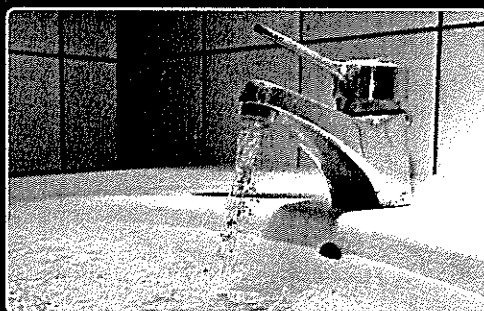
- Water flow rate is related to water pressure. This means that you can **reduce the water flow** from a fitting operating on a fixed setting if the water pressure is reduced. For example, a **pressure reducing valve** can reduce pressure from 100 pounds per square inch (psi) to 50 psi which reduces water flow by around one third. Lower water pressure also lessens the risk of leaking pipes, water heaters and taps.



- Water that has been used in sinks and baths (not toilets) can be **reused** for landscaping through a **grey water recycling system**. The wastewater is treated on site and stored. Some grey water systems pump the grey water back into the building and reuse it in the toilet systems. Grey water recycling requires a second piping system with a pump, settlement tanks, a dosing system for disinfection and filters and it is easier and more cost effective to design these in at the building or major refurbishment stage.

## Baths and basins

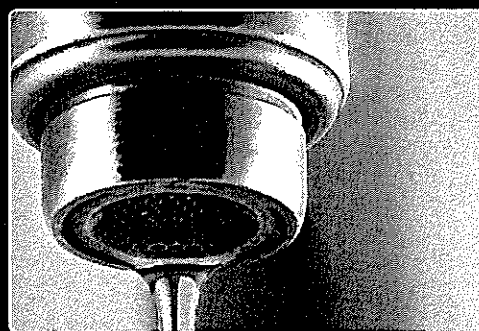
- Select the **size of baths and basins** carefully as size has a dramatic effect on water consumption. Even using one litre less per bath per guest per year will yield huge savings.



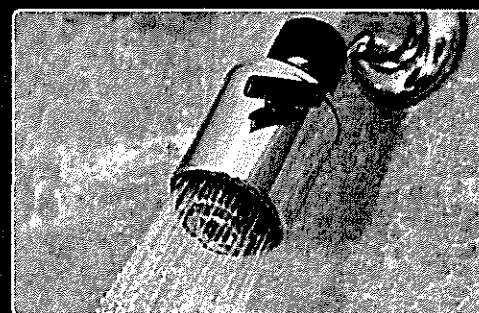
- Consider installing **programmable controls** in guest rooms to dictate the temperature and maximum fill level of the bath. This enables the guest to press a button to fill the bath, and reduces the risk of it overflowing.

## Taps (faucets) and shower heads

- Adjustable flow restrictors** on taps enable them to deliver a lower instantaneous flow rate than screw-operated taps and can reduce water use by over 50 per cent.
- Faucet aerators** are small valves that break the flow of water into fine droplets and entrain air while maintaining wetting effectiveness. They are inexpensive and can reduce the water use at each faucet by as much as 60 per cent whilst maintaining a strong flow. Typically, they use 7.5 litres of water a minute compared with conventional faucets, which use 11–19 litres.



- Self-closing percussion or push taps** which close automatically after up to 30 seconds are particularly suitable for cloakroom facilities in public areas. These can be activated by **passive infra-red (PIR) sensors** to further reduce consumption. Some types can be supplied in kit form to fit onto existing standard tap bodies without disturbing the pipe-work.
- Low-flow shower heads** cost very little and use around 9.45 litres a minute compared with conventional heads (which typically use nearly twice that). If properly designed they should feel as effective as higher water volume models.
- Some shower head models incorporate a **vacuum flow valve** which aerates and compacts the water so it leaves the showerhead in a powerful stream but consumption is only around five litres per minute. Test that they work throughout the hotel (especially the top floor), as they require a set water pressure to operate effectively.



## Urinals

A urinal flushing every 15 minutes can use as much as 150,000 litres of water a year. Techniques for reducing water use in urinals include:

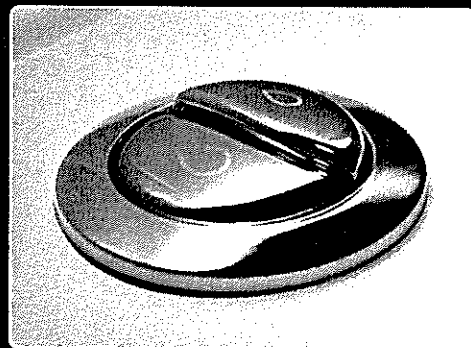
- **Passive infra red (PIR)** devices which initiate a flush when they detect activity or which flush at shorter intervals during busy times.
- **Timers** that flush more frequently at peak times; the mechanism should be set to flush for no more than 10 seconds at a time.
- **Waterless urinals.** These are generally retrofit units although new urinal bowls are available. Water is only necessary for cleaning. Some models incorporate a special sealed sprung trap through which the liquid waste travels into the drain line. The springs should be checked regularly to ensure they are working properly and are free of debris as the seal ensures against odours. Other models use the principle of floating oil in a trap on top of the water and urine to act as the seal. As the level rises, the water and urine drain away underneath. The level of oil needs to be checked and kept topped up for the system to operate effectively. Another system uses a chemically impregnated pad in a modified S-bend trap. These units can be retrofitted to existing men's toilets. The pads must be changed weekly to maintain hygiene standards.



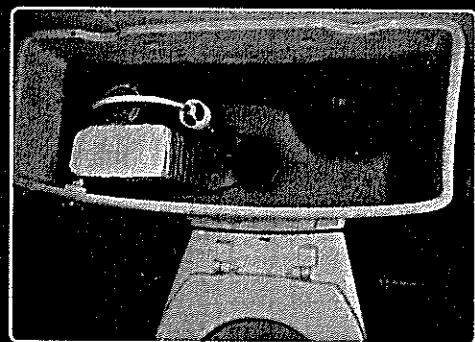
- **A sleeve-based system** that uses a disposable sleeve designed to remove the odours associated with bacteria and uric acid at source. Unlike the waterless urinal, limited flushing is required in order to allow enzymes lining the sleeve to filter down into the urinal bowl and feed on the uric salts. Flushing removes the debris and sludge from the waste pipes but is limited to 4–6 flushes a day, rather than 4–6 times an hour with conventional urinals. This can lead to water savings of over 90 per cent compared with conventional urinals and the payback period can be as little as nine to twelve months. There is no need to use chemicals and these systems claim to dramatically reduce blockages.

## Toilets

- **Low-flush toilets** use six litres of water or less per flush compared with older, conventional toilets which can use 10–20 litres. Flushing less water away will reduce wastewater treatment costs too.
- Toilets with a **dual flush option** can save water by enabling guests to select a full or half-flush.



- **Cistern volume-adjusting devices** can take various forms such as bricks (see image below), plastic containers or bags filled with water ('hippos') or pebbles. These are placed in the cistern to reduce the amount of water used per flush. It is important however to ensure that they do not impede the flushing mechanism or the flow of water. Toilet dams, which hold back a reservoir of water when the toilet is flushed, are another form of displacement device and can typically save 3.8–7.5 litres per flush. Other devices redirect the refill water into the tank, thereby filling it quicker and decreasing the amount of water wasted per flush. To maintain hygiene, you need to be aware of the minimum flushing volume of the toilet.



- **Composting toilets** reduce pollution and eliminate water and sewerage costs. They are most suitable for operation in remote areas and ecologically sensitive environments where there is no or poor water infrastructure.